

Jerzy Bodurka Ph.D.

Chief Technology Officer, Associate Professor
Laureate Institute for Brain Research,
Associate Professor, College of Engineering Dean,
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Skills:

- NMR, MRI, EEG physics and technology.
- Analytical/computational abilities.
- Pulse programming for General Electric LX/VH/HDx/Discovery (Epic) and Bruker Medspec (Paravision) MRI scanners.
- Linux kernel (device drivers) programming in C.
- System and network Unix/Linux programming in C, Perl and Python.
- Unix/Linux/OS X/Win system administration.
- Web design/programming in HTML/Perl-CGI/PHP/Javascript.
- Proficiency in Scilab, IDL, Matlab, Mathematica, Maple etc.
- Make things happen attitude.

Education:

-**M. S., Physics** (with honors, 1988), Nicolaus Copernicus University, Torun, Poland

-**Ph. D., Physics** (with honors, 1995), Nicolaus Copernicus University, Torun, Poland

Dissertation Title: NMR investigation of water dynamics in the mammalian lens.

Research interest:

Multimodal electroencephalography (EEG) and blood oxygenation level dependent functional Magnetic Resonance Imaging (BOLD fMRI) neuroimaging for study human brain functions, dynamics, and neuromodulation. Real-time imaging with BOLD fMRI. Real-time fMRI neurofeedback and EEG/fMRI multimodal neurofeedback. Pushing limits for very high spatial and temporal resolution in BOLD fMRI. Physiological noise in fMRI. Mechanisms of BOLD fMRI contrast. Direct MRI detection of ultra-weak and transient magnetic field changes of neuronal origin. New contrast mechanism in MRI.

Major accomplishments:

1) I have established multimodal brain neuroimaging program at the Laureate Institute for Brain Research (LIBR). To support this program I created a new LIBR MRI and EEG Facility to conduct an advance multimodal neuroimaging research. The facility is equipped with state-of-the-art new generation General Electric Discovery MR750 3Tesla MRI scanner, custom made highly sensitive dedicated brain (8,16,32channels), and spinal cord (16ch) surface coil arrays, custom develop real-time fMRI system with ability to provide multimodal fMRI/EEG neurofeedback. The state-of-the art MRI-compatible Brain Products 128ch EEG system is available for simultaneous fMRI and EEG recording. Wide range of fMRI stimulus delivery, and monitoring human autonomic response equipment, is available for cutting edge fMRI and multimodal EEG/fMRI research.

2) Development of a real time MRI scanner monitoring software for GE HDx and a newest generation MR750 Discovery scanners. This software package allowed for: setting up the real-time image display and motion correction with Afni, on fly imaging data extraction from the scanner, an authentication mechanism, the scanner usage monitoring, the real-time subject physiological data recording and the real-time neuro-feedback experiments. This software package is installed on all NIH GE HDx scanners (five 3Ts, 1.5T and 7T). Besides NIH this system has been recently installed and shared with Medical College of Wisconsin, Purdue University, University California San Diego USA, Cornell University and Institute of Psychiatry King's College London, England.

3) A Scalable Multi-Channel MRI Data Acquisition System for parallel imaging. Development of a low level hardware controlling software (Linux based device driver), data acquisition, data handling and network software for sixteen channel digital MRI receiver (1MHz sampling bandwidth per channel). Integration of the MRI receiver with the GE VH/3 3Tesla MRI scanner. Development of Graphic User Interface (GUI) software for MRI receiver and scanner real-time control. This development also allowed for the design

and testing of the entire family of highly sensitive, multi-element, surface coil arrays for brain and spinal imaging. The receiver together with 16-element the whole brain surface coils array offers up to 6 fold SNR improvements in the human brain cortex and overall 3-fold SNR increase over the whole brain as compared to standard single channel MRI data acquisition with standard transmit receive birdcage coil. Significant SNR and data acquisition speed improvements combined with parallel imaging techniques like Sensitivity Encoding (SENSE) allows for conducting the whole brain EPI fMRI studies with with good temporal and ultra high spatial resolution (voxel volume as small as 1 cubic mm). This very successful and influential project affected not only NIH and the worldwide MRI community by opening new windows for exploring high spatial and temporal fMRI limits, but also influenced the research direction of major MRI vendors and their MRI scanner designs. Massive parallel imaging with multiple highly sensitive receiver surface coils is becoming a standard in the state-of-the-art fMRI research.

Work experience:

07/2012-current position

Chief Technology Officer, Associate Professor, Laureate Institute for Brain Research, Tulsa, OK
Associate Professor, College of Engineering Dean, University of Oklahoma, Tulsa, OK.

07/2009-07/2012

Associate Professor and Director of MRI and EEG Facility at Laureate Institute for Brain Research, Tulsa, OK. I have established and created a new MRI and EEG Facility equipped with state-of-the-art new generation General Electric Discovery MR750 3Tesla MRI scanner, and MRI-compatible EEG 128 channel system from Brain Products. The MRI scanner is equipped with custom built array of high sensitive phase array brain coils including 32, 16-element arrays, 16-element spinal array. The scanner is also equipped with my real-time software allowing for conducting real-time fMRI with neurofeedback. Full array of stimulus delivery equipment for conducting fMRI research is also available, this includes: custom build front, back projection for visual stimulus deliver, Nordic Neuro Lab stimulus suite, eye tracking hardware and software, BIOPAC 16 channel system to collect physiological waveforms including skin conductance, EMG, exhale CO₂, the whole array of equipment to collect subject responses. The MRI and EEG facility provides ability to conduct state-of-the-art fMRI/MRI and multimodal EEG/fMRI research.

2000 - 06/2009

Staff Scientist in Functional MRI Facility at National Institute of Mental Health, National Institutes of Health. FMRIF serves very large NIH MRI community and provide state of the art fMRI/MRS/MRI research environment. I served as principle MRI Physicist responsible for daily operation of two 3 Tesla and one 1.5 Tesla GE HDx MRI scanners used by more than 250 researches/clinicians. Some of my duties include: performing scanners hardware/software maintenance, upgrades, modifications; developing and/or implementing new imaging and stimulus delivery techniques; designing and overseeing daily quality assurance and scanner performance tests to ensuring the highest quality imaging data; troubleshooting/solving/fixing scanners problems; interaction with facility users and helping them with imaging protocols and experiments design; supervising FMRIF MRI technologists (eight people); FMRIF budget planning/preparation; equipment/supplies purchasing; new staff hiring; all FMRIF MRI scanners (4 systems) annual service contracts handling.

1999 – 2000: Research Scientist

Biophysics Research Institute, Medical College of Wisconsin, Milwaukee

1997 – 1999: Postdoctoral Fellow

Biophysics Research Institute, Medical College of Wisconsin, Milwaukee.

Research interests and projects:

BOLD physical mechanisms and models, current - induced MR phase imaging, noise analysis in fMRI, physiological noise. Eddy current compensation for local gradient coils. Ultra-fast and SSFP imaging MRI techniques for development of Bruker Medspec 3T system (Paravision). Implementation of spectral-spatial pulses for effective fat suppression.

1996: Visiting Scientist (3 months on sabbatical leave)

Section of NMR Spectroscopy, University of Ulm, Germany

Research interests:

Field cycling NMR relaxometry and its application to study water molecular dynamics in biological interfaces.

1995: Visiting Researcher (3 months on sabbatical leave)

Department of Chemistry, The Free University of Berlin, Germany

Research interests and projects:

Cross-relaxation effects in biological systems. Building a low (helium) temperature double tune probehead for solid state NMR, double quantum NMR.

1995 – 1997: Assistant Professor

Department of Biophysics, University of Medical Sciences, Bydgoszcz, Poland

Research interests:

Application of NMR spectroscopy and relaxometry to study molecular mechanism of cataract formation in mammalian eye lenses.

1992 – 1994: Visiting Researcher (intermittent visits).

Department of Chemistry, The Free University of Berlin, Germany

Research interests:

NMR study of the cross-relaxation effects between macromolecular and water protons in biological systems.

1987 – 1995: Research Assistant,

Department of Biophysics, University of Medical Sciences, Bydgoszcz, Poland

Research interests:

NMR spectroscopy and relaxometry, molecular dynamics of water molecules in heterogeneous systems.

Mentoring and Teaching:

#Mentored:

1) <2009 : 3 PhD candidates and 1 postdoctoral fellow. Of these mentees, one entered industrial research and development, two hold research staff appointments, and one now hold faculty positions at respected universities and research institutes.

2) 2011-2013: Dr Maryam Falahpour Ghadikolaei, Doctoral Student, The University of Oklahoma, Engineering, Tulsa Graduate College

#Currently mentoring 3 postdoctoral fellows (LIBR), 1 PhD graduate student (The Oklahoma University) and 2 MS candidate (The University of Tulsa, The University of Oklahoma).

Supervisory Experience:

#Extensive supervisory and managerial experience: 2000-2009 established and overseeing day-to-day operations of large MRI facility: four MRI systems, supervising 8 members of technical staff.

#Currently Chief Technology Officer, Principal Investigator co-founder of the Laureate Institute for Brain Research, supervising 13 members of technical and research staff.

Awards:

1) International Society for Magnetic Resonance in Medicine for distinguished service to the society
as reviewer for Magnetic Resonance in Medicine (2010, 2011)

2) NIH Director's Award (2007): advancements in MRI parallel imaging technology

3) NIMH Scientific Director Merit Award (2007): appreciation of very successful fMRIF facility operation.

4) NIMH/NIH, NINDS/NIH Service Award (2000, 2002, 2003, 2004, 2005, 2006)

5) Polish Health Minister's scientific award (1997): advancements in understanding water dynamics in mammalian lenses

6) Dean's Annual scientific achievements awards (1994, 1995, 1996, 1997)

7) Ph. D. Thesis Graduation with award (1995)

External Research Grant Funded:

1) Principal Investigator: Emotion Regulation Training for Treating Warfighters with Combat-Related PTSD using Real-time fMRI and EEG-Assisted Neurofeedback. (09/30/12-09/30/15); PT110256; Department of Defense Research Grant; W81XWH-12-1-0607; Direct costs to LIBR: \$2,132,156.0;

2) Principal Investigator: Inflammatory transcripts, genes and positive valence system function in anhedonia. (09/01/12-07/31/16); NIMH Grant; 1R01MH098099; Direct costs to LIBR: \$1,601,159.0;

3) Subcontract, Co-Investigator: Cyber Trust and Suspicion. (09/01/12-07/31/15); Department of Defense Research Grant; BAA-AFSOR-2012-0001; Direct costs to LIBR: \$777,982.0;

4) Co-Investigator: Functional imaging of spinal cord: from experimental animals to human. Human Frontier Science Program (HFSP) research grant (2004-2007). Grant awarded in 2004 due to my work with 16ch digital MRI receiver and unique hardware NIH capabilities for high sensitivity parallel fMRI imaging with custom design 16-element spinal array.

5) Principle Investigator: NMR investigation of water dynamics in mammalian lenses. Polish State Scientific Committee research grant (1995-1997).

External Training Grant Funded:

1) TEMPUS Fellowship in support of a staff retraining and updating (1995)

2) Pharmacia Ophthalmics Fellowship (1994)

Affiliations:

International Society for Magnetic Resonance in Medicine, Organization for Human Brain Mapping, AAAS, Polish Physics Society

Editorial board member for the following journal:

1) Public Library of Science, PLOS ONE

Associate editor for the following journal:

- 1) Medical Physics

Regular reviewer for the following journals:

- 1) Magnetic Resonance in Medicine (since 2000)
- 2) NeuroImage (since 2001)
- 3) Human Brain Mapping (since 2003)

Ad hoc reviewer for the following journals:

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| 1) Journal of Magnetic Resonance | 2) Journal of Magnetic Resonance Imaging |
| 3) Journal of Magnetic Resonance Imaging | 3) Brain |
| 4) Concepts in Magnetic Resonance part B | 5) Public Library of Science, PLOS ONE |
| 6) Journal of Applied Physics | 7) IEEE-Sensors |
| 8) Medical Physics | 9) Psychology of Addictive Behaviors |
| 10) The Open Neuroimaging Journal | 11) The Malaysian Journal of Medical Sciences |
| 12) Brain Research | 13) Journal of Neuroscience |

Grant reviewer's:

- 1) Engineering and Physical Science Research Council United Kingdom (2012)
- 2) The Netherlands Organization for Scientific Research Netherland (2011)
- 3) NIH, Center for Scientific Review, Share equipment grants S10, PAR-13-008 program (2013).

Academic services:

- 1) The University of Tulsa Faculty of Community Medicine, Faculty Review Committee Member
March-April 2013

Media appearances:

- 1) Jan, 2012. NHK (Japan public television) documentary on depression mechanisms and non-pharmacological treatments
- 2) Apr, 2013, NPR interview: Laureate Institute Thinks Ahead on PTSD
<http://publicradiotulsa.org/post/laureate-institute-thinks-ahead-ptsd>
Radio interview on the federal funded study of "Emotion Regulation Training for Treating Warfighters with Combat-Related PTSD using Real-time fMRI and EEG- Assisted Neurofeedback".
- 3) Aug 22, 2013, TV News on 6 (local Tulsa, Oklahoma City television news station) documentary on the federal funded research of "Emotion Regulation Training for Treating Warfighters with Combat-Related PTSD using Real-time fMRI and EEG- Assisted Neurofeedback" aiming to improve care for combat veterans.

Others:

space exploration, history, rock/jazz music, hiking, tennis, travels, native Polish speaker

A. Published Peer-Review Original Publications:

- 48 Young, K.D., Zotev, V., Phillips, R., Misaki, M., Drevets, W.C., Bodurka, J. Real-time fMRI neurofeedback training of amygdala activity in patients with major depressive disorders. PLOS One 2014 (in press)
- 47 Avery, J.A., Drevets, W.C., Moseman, S.E., Bodurka, J., Barcalow, J.C., Simmons, W.K., Major depressive disorder is associated with abnormal interoceptive activity and functional connectivity in the Insula. Biol. Psychiatry 2014 (in press)
- 46 Lawrence, E.J., Su, L., Barker, G.J., Medford, N., Dalton, J., Williams, S.C., Birbaumer, N., Veit, R., Ranganatha, S., **Bodurka, J.**, Brammer, M., Giampietro, V., David, A.S. Self-regulation of the anterior insula: Reinforcement learning using real-time fMRI neurofeedback. Neuroimage 2014 (in press).
- 45 Zotev, V., Phillips, R., Yuan, H., Misaki, M., **Bodurka, J.** Self-regulation of human brain activity using simultaneous real-time fMRI and EEG neurofeedback. Neuroimage 2014, 85:985-995.
- 44 Zotev, V., Phillips, R., Young, K.D., Drevets, W.C., **Bodurka, J.** Prefrontal control of the amygdala during real-time fMRI neurofeedback of emotion regulation. PloS One 2013, 8(10):e79184. doi: 10.1371/journal.pone.0079184.
- 43 Young, K.D., Bellgowan, P.S.F., **Bodurka, J.**, Drevets, W.C. Behavioral and neurophysiological correlates of autobiographical

- memory deficits in patients with depression and individuals at high risk for depression. *JAMA Psychiatry* 2013, 70:698-708.
- 42 Yuan, H., Zotev, V., Phillips, R., **Bodurka, J.** Correlated slow fluctuations in respiration, eeg, and BOLD fMRI. *Neuroimage*, 2013, 79:81-93.
- 41 Falahpour, M., Refai, H., **Bodurka, J.** Subject specific BOLD fMRI respiratory and cardiac response functions obtained from global signal. *Neuroimage*, 2013 72:252-264.
- 40 Mur, M., Meys, M., **Bodurka, J.**, Goebel, R., Bandettini, P.A., Kriegeskorte, N., Human object-similarity judgements reflect and transcend the primate-IT object representation. *Front. Psychol.* 2013, 4:128, doi:10.3389/fpsyg.2013.00128.
- 39 Savitz J., Frank, M.B., Victor, T., Bebak, M., Marino, J.H., Bellgowan, P.S.F., McKinney, B.A., **Bodurka, J.**, Teague, T.K., Drevets, W.C. Inflammation and Neurological Disease-Related Genes are Differentially Expressed in Depressed Patients with Mood Disorders and Correlate with Morphometric and Functional Imaging Abnormalities. *Brain, Behaviour and Immunity.* 2013, 70(7):698-708.
- 38 Young, K.D., Bellgowan, P.S., **Bodurka, J.**, Drevets, W.C. Functional neuroimaging of sex differences in autobiographical memory recall. *Hum. Brain Mapp.* 2013, 34(12):3320-3332.
- 37 Simmons, W.K., Avery, J., Barcalow, J., **Bodurka, J.**, Drevets, W.C., Bellgowan, P. Keeping the body in mind: Insula functional organization and functional connectivity integrate interoceptive, exteroceptive, and emotional awareness. *Human Brain Mapping*, 2013, 34(11):2944-2958.
- 36 Zotev, V., Yuan, H., Phillips, R., **Bodurka, J.** EEG-assisted retrospective motion correction for fMRI: E-REMCOR. *Neuroimage*, 2012, 63(2):698-712.
- 35 Mur M, Ruff DA, **Bodurka J.** De Weerd P, Bandettini PA, Kriegeskorte N. Categorical, yet graded - single-image activation profiles of human category-selective cortical regions. *J Neurosci.* 2012, 32(25):8649-62.
- 34 Yuan, H., Zotev, V., Phillips, R., Drevets, W.C., **Bodurka, J.** Spatiotemporal dynamics of the brain at rest – exploring EEG microstates as electrophysiological signatures of BOLD resting state networks. *Neuroimage* 2012, 60,2062-2072.
- 33 Zotev, V., Krueger, F., Phillips, R., Alvarez, R.P., Simmons, W.K., Bellgowan, P., Drevets, W.C., **Bodurka, J.** Self-regulation of amygdala activation using real-time fMRI neurofeedback. *PloS One*, 2011, 6(9):e24522.doi:10.1371/journal.pone.0024522
- 32 Alvarez, R.P., Chen, G., **Bodurka, J.**, Kaplan, R. Grillon, C. Phasic and sustained fear in human elicits distinct patterns of brain activity. *Neuroimage* 2011, 55, 389-400.
- 31 Gonzales-Castillo, J., Roopchansingh, V., Bandettini, P.A., **Bodurka, J.** Physiological noise effects on the flip angle selection in BOLD fMRI. *Neuroimage*, 2011, 54,2764-2778.
- 30 Mur, M., Ruff, D.A., **Bodurka, J.**, Bandettini, P.A., Kriegeskorte, N. Face-identity change activation outside the face system: “release from adaptation” may not always indicate neuronal selectivity. *Cerebral Cortex* 2010, 20(9), 2027-42.
- 29 Bellgowan, P.S., Buffalo, E.A., **Bodurka, J.**, Martin, A. Lateralized spatial and object memory encoding in entorhinal and perirhinal cortices. *Learn Mem.* 2009, 24, 433-438.
- 28 Kriegeskorte, N., Mur, M., Ruff, D., Kiani, R., **Bodurka, J.**, Esteky, H., Tanaka, K., Bandettini, P.A. Matching categorial object representation in inferior temporal cortex of man and monkey. *Neuron* 2008, 60, 1-16.
- 27 Kriegeskorte, N., **Bodurka, J.**, Bandettini, P.A. Artefactual time-course correlations in echo-planar fMRI with implications for studies of brain function. *International Journal of Imaging Systems and Technology* 2008, 18(5-6), 345-349.
- 26 Chuang, K-H., van Gelderen, P., Merkle, H., **Bodurka, J.**, Ikonomidou, V.N., Koretsky, A.P., Duyn, J.H., Talagala, S.L. Mapping resting-state functional connectivity using perfusion MRI. *Neuroimage* 2008, 40, 1595-1605.
- 25 Salloum, J., Ramchandani, V.A., **Bodurka, J.**, Rawlings, R., Momenan, R., David, G., Hommer, G.W., Blunted Rostral Anterior Cingulate Response during a Simplified Decoding Task of Negative Emotional Facial Expressions in Alcoholic Patients. *Alcohol. Clin. Exp. Res.* 2007, 39(2), 1-15.
- 24 Maieron, M., Iannetti, G.D., **Bodurka, J.**, Tracey, I., Bandettini, P.A., Porro, C.A. Functional Responses in the Human Spinal Cord during Willed Motor Actions: Evidence for Side- and Rate-Dependent Activity. *J. Neurosci.* 2007, 27, 4182-4190.
- 23 **Bodurka, J.**, Ye, F., Petridou, N., Murphy, K., Bandettini, P.A. Mapping the MRI voxel volume in which thermal noise matches physiological noise – implication for fMRI. *Neuroimage*, 2007, 34, 542-549.
- 22 Murphy, K., **Bodurka, J.**, Bandettini, P.A. How long to scan? The relationship between fMRI temporal signal to noise and the necessary scan duration. *Neuroimage*, 2007, 34, 565-574.
- 21 Petridou, N., Plenz, D., Silva, A.C., Loew, M., **Bodurka, J.**, Bandettini, P.A. Direct Magnetic Resonance Detection of Neuronal Electrical Activity. *Proc. Natl. Acad. Sci. USA.* 2006, 103; 16015-16020.
- 20 Bellgowan, P.S.F., Bandettini, P.A., van Gelderen, P., Martin, A., **Bodurka, J.** Improved BOLD Detection in the Medial Temporal Region Using Parallel Imaging and Voxel Volume Reduction. *Neuroimage*, 2006, 29, 1244-1251.
- 19 Bandettini, P.A., Petridou, N., **Bodurka, J.** Direct Detection of Neuronal Activity with MRI: Fantasy, Possibility or Reality. *Appl. Magn. Reson.* 2005, 29, 65-88.
- 18 Beauchamp, M.S., Argall, B.D., **Bodurka, J.**, Duyn, J.H., Martin, A. Unraveling multisensory integration: patchy organization within human STS multisensory cortex. *Nature Neurosci.* 2004, 7 (11), 1190-1192.
- 17 **Bodurka, J.**, Ledden, P., van Gelderen, P., Chu, R., de Zwart, J., Duyn, J. Scalable multi-channel MRI data acquisition system. *Magn. Reson. Med.* 2004, 51, 165-171.

- 16 de Zwart, J., Ledden, P., van Gelderen, P., **Bodurka, J.**, Chu, R., Duyn, J. Signal-to-Noise Ratio and parallel imaging performance of 16-channel receive-only brain coil array at 3.0 Tesla. *Magn. Reson. Med.* 2004, 51, 22-26.
- 15 **Bodurka, J.**, P.A. Bandettini, P.A. Toward direct mapping of neuronal activity: MRI detection of ultra-weak and transient magnetic field changes. *Magn. Reson. Med.* 2002, 47; 1052-1059.
- 14 Zhao, X., **Bodurka, J.**, Jesmanowicz, A., Li, S.-J. B₀-fluctuation-induced temporal variation in EPI image series due to the disturbance of Steady - State Free Precession (SSFP). *Magn. Reson. Med.* 2000, 44, 758-765.
- 13 Xu, H., Li, S.-J., **Bodurka, J.**, Zhao, X., Xi, Z.X., Stein, E.A. Heroin-induced neuronal activation in rat brain assessed by functional MRI. *NeuroReport* 2000, 11(5), 1-8.
- 12 Olechnowicz, R., Masierak, W., **Bodurka, J.**, Gutsze, A. 1H NMR relaxation measurements in highly concentrated water protein solutions. *Magn. Reson. Chem.* 1999, 37, 147-149.
- 11 **Bodurka, J.**, Buntkowsky, G., Gutsze, A., Masierak, W. NMR study of role of the cross-relaxation effect in the cortex and the nucleus rabbit lens fragments. *Coll. Surf A* 1999, 158, 115-119.
- 10 **Bodurka, J.**, Jesmanowicz, A., Hyde, J.S., Xu, H., Estkowsky, L., Li, S.-J. Current-induced magnetic resonance phase imaging. *J. Magn. Reson.* 1999, 137, 265-271.
- 9 **Bodurka, J.**, Seitter, R.O., Kimmich, R., Gutsze, A., Field-Cycling NMR Relaxometry of Molecular Dynamics at Biological Interfaces in Eye Lenses. The Levy Walk Mechanism. *J. Chem. Phys.* 1997, 107, 5621-5625.
- 8 Bodurka, M., Caputa, M., **Bodurka, J.**, A comparison of febrile responses induced by LPS from E. coli and S. abortus in unrestrained rats placed in thermal gradient. *J. Physiol. Pharmacol.* 1997, 48, 1, 81-88.
- 7 **Bodurka, J.**, Buntkowsky, G., Gutsze, A., Bodurka, M., Limbach, H.H. Analysis of the 1H NMR line shape found in the animal lenses. *Applied Spectroscopy* 1996, 50, 1421-1427.
- 6 **Bodurka, J.**, Buntkowsky, G., Olechnowicz, R., Gutsze, A., Limbach, H.H. Investigation of water in normal and dehydrated rabbit lenses with 1H NMR and calorimetric measurements. *Coll. Surf. A* 1996, 115, 55 - 62.
- 5 **Bodurka, J.**, Buntkowsky, G., Gutsze, A., Limbach, H.H. Evidence of surface diffusion of water molecules on proteins in the rabbit lenses from 1H NMR measurements. *Z. Naturforsch.* 1996, 51C, 81-90.
- 4 Gutsze, A **Bodurka, J.**, Olechnowicz, R., Buntkowsky, G., Limbach, H.H. 1H NMR and calorimetric measurements on rabbit eye lenses. *Z Naturforsch.* 1995, 50C, 410-418.
- 3 **Bodurka, J.**, Gutsze, A., Buntkowsky, G., Limbach, H.H. Evidence of anisotropic reorientation of water molecules in the cortex of rabbit lens detected by 1H-NMR spectroscopy. *Z. Chem. Phys.* 1995, 190, 99-109.
- 2 Gutsze, A. **Bodurka, J.**, Olechnowicz, R., Jesmanowicz, A. Nuclear relaxation times "in vivo" and "in vitro" of human and rabbit lenses. *Coll. Surf. A* 72, 1993, 295-299.
- 1 Gutsze, A., Deininger, D., Olechnowicz, R., **Bodurka, J.** Measurements of proton relaxation time T2 on cattle eye lenses. *Lens and Eye Tox. Res.* 1991, 8 (2,3), 155-162.

B. Peer-Reviewed Published Conference Presentations and Abstracts:

- 116 Yuan, H., Zotev, V., Phillips, R., Young, K., Misaki, M., **Bodurka, J.** Abnormal Resting-State Default Mode Network Connectivity in Major Depressive Disorder: Multimodal EEG and BOLD fMRI Study. (2013) In: *Proc. Intl. Soc. Magn. Reson. Med.* 21, 732.
- 115 Yuan, H., Phillips, R., Young, K., Zotev, V., Misaki, M., **Bodurka, J.** Real-Time fMRI Neurofeedback Training of Amygdala Alters Resting-State Default Mode Network Connectivity in Major Depressive Disorder. (2013) In: *Proc. Intl. Soc. Magn. Reson. Med.* 21, 1185.
- 114 Phillips, R., Young, K., Zotev, V., Misaki, M., Yuan, H., Drevets, W., **Bodurka, J.** Real-Time fMRI Neurofeedback Training of Amygdala in MDD Patients. (2013) In: *Proc. Intl. Soc. Magn. Reson. Med.* 21, 1161.
- 113 Misaki, M., Zotev, V., Phillips, R., Young, K., Yuan, H., Savitz, J., Drevets, W., **Bodurka, J.** Brain on Fire: Temporal Standard Deviation of Resting State BOLD Signal Increases in Major Depressive Disorders. (2013) In: *Proc. Intl. Soc. Magn. Reson. Med.* 21, 1160.
- 112 Yuan, H., Ding, L., Zhu, M., **Bodurka, J.** Simultaneous fMRI and EEG Study of Never Resting Brain: Spatial and Temporal Similarity of EEG Microstates Cortical Representation and BOLD Resting State Networks. (2013) In: *Proc. Intl. Soc. Magn. Reson. Med.* 21, 2241.
- 111 Zotev, V., Yuan, H., Misaki, M., Phillips, R., Young, K., **Bodurka, J.** Real-Time fMRI Neurofeedback Training of Amygdala Modulates Frontal EEG Asymmetry in MDD Patients. (2013) In: *Proc. Intl. Soc. Magn. Reson. Med.* 21, 521.
- 110 Zotev, V., Yuan, H., Misaki, M., Phillips, R., Young, K., **Bodurka, J.** Changes in Upper Alpha EEG Power Predict Performance in Real-Time fMRI Neurofeedback Training of Amygdala. (2013) In: *Proc. Intl. Soc. Magn. Reson. Med.* 21, 3569.
- 109 Zotev, V., Yuan, H., Misaki, M., Phillips, R., Young, K., **Bodurka, J.** Effects of Rapid Head Motions on Group fMRI Functional Connectivity Evaluated with E-REMCOR. (2013) In: *Proc. Intl. Soc. Magn. Reson. Med.* 21, 3350.

- 108 Falahpour, M., Refai, H., **Bodurka, J.** Subject-Specific BOLD fMRI Respiratory and Cardiac Response Functions Obtained from Global Signal. (2013) In: Proc. Intl. Soc. Magn. Reson. Med. 21, 3347.
- 107 Misaki, M., Savitz, J., Zotev, V., Phillips, R., Yuan, H., Drevets, W., **Bodurka, J.** Structural Contrast Enhancements by Novel Way to Combine T1- And T2-Weighted MR Images. (2013) In: Proc. Intl. Soc. Magn. Reson. Med. 21, 3024
- 106 Young, K., Phillips, R., Zotev, V., Drevets, W.C, **Bodurka, J.** Self-regulation of Amygdala Activity with Real-time fMRI Neurofeedback in Patients with Depression. (2012) Neuropsychopharmacology 38; S198-S313, T94.
- 105 Simmons, W.K., Avery, J., Barcalow, J., Mosemann, S., **Bodurka, J.**, Drevets, W.C. Major Depressive Disorder is Associated with Abnormal Responses in the Dorsal Mid-insula during Attention to Interoceptive States. (2012) Neuropsychopharmacology 38; S198-S313, T147.
- 104 Zotev, V., Phillips, R., Young, K., Drevets, W.C., **Bodurka, J.** Real-time fMRI neurofeedback modulates brain networks: insights from Granger causality analysis. (2012) In:Proc. Of Human Brain Mapping Conference, Beijing, Abst. 184.
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